FLOWSERVE

Villach Operation

Operation Instructions

Montage- und Betriebsanleitung
Installation and Operating Instructions
Инструкция за монтаж и експлоатация
Návod k montáži a použití
Monterings- og driftsvejledning
Οδηγίες εγκατάστασης και λειτουργίας
Instrucciones de montaje y de servicio
Montaaži- ja kasutusjuhend
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Notice de montage et mode d'emploi
Szerelési és üzemeltetési utasítás
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Montavimo ir naudojimo instrukcija
Montāžas un ekspluatācijas pamācība
Manwal ta' l-Apparat
Montage- en Handleiding
Instrukcja montażu i obsługi
Instruções de Instalação e Utilização
Instrucțiuni de montaj şi utilizare
Инструкция по монтажу и руководство по эксплуатации
Návod na montáž a obsluhu
Navodila za montažo in obratovanje
Monterings- och bruksanvisning
Montaj ve Kullanma kılavuzu

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This control valve was manufactured to the strict standards of our ISO 9001 certified quality management system. It was tested for compliance with all applicable regulations and guidelines and fully conforms with all contractually agreed specifications.

To ensure a faultless and reliable operation of this product, please read and observe these installation and operating instructions **before using** this product.

Failure to comply with these installation and operating instructions will render the manufacturer’s guarantee and liability null and void. Unless otherwise agreed, the manufacturer’s General Terms and Conditions of Sale shall apply.

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Scope

These operating instructions shall apply to:

- Single-seated control valves (PN 10–160, Class 150–900)
- Lined single-seated control valves (PN 10/40)
- Three-way control valves (PN 10–160, Class 150–600)
- Double-seated control valves (PN 10–160)
- Special valves

with fitted pneumatic or electrical linear actuator

with fitted linear unit and electrical rotary actuator

- with or without accessories

Product description

Control valves control gases, vapours or liquids and change the flow conditions of a process.

The control valves consists of the body (valve bottom) and the actuator which, depending on the control signal, changes the position of the closure member (plug) relative to the seat. The bodies have been arranged in logical kits, allowing the user to assemble the highest possible number of variants from a minimum of components to match each individual application. Our range also includes a series of peripheral units such as positioners, boosters, filter-reducing stations or solenoid valves. Positioners and solenoid valves can be assembled directly or according to NAMUR recommendations. Refer to the relevant manufacturer's instruction manual for information regarding peripheral equipment.

1. Installation

The valve must be installed and commissioned by qualified staff. Qualified staff is defined as personnel who are familiar with the installation, commissioning and operation of this product and possess the relevant qualifications in their field of activity.

1.1 "As delivered" status

Control valves are generally delivered as tested and assembled units with the actuators fitted. Parts of the body and actuator subject to corrosion are protected by a coat of paint. Unpainted components are greased and the openings of the housings are closed with plugs. High-grade steel housings are delivered without a protective coat of paint (pickled or blasted).

1.1.1 Transport

Careful loading and transport arrangements are required to avoid the product suffering impact and jolting movements. Under no circumstances should lifting gear be attached to the valve spindle, travel indicator and any peripheral units, if applicable. We recommend the use of a length of rope that is looped around the valve head underneath the yoke (or the transportation eyelet(s)). The maximum permitted carrying capacity must be observed. Promptly touch up any damage to the corrosion protection.

1.1.2 Storage

Upon arrival on site, store the control valve on a solid base in a closed room. Until its installation, the valve must be protected from the weather, dirt and other potentially harmful influences. Under no circumstances should the valve remain in storage for more than 6 months, as the impregnation in the stuffing box packing evaporates and leaks may develop. Do not remove the plugs protecting the flanges and the inside of the control valve until it has arrived at its place of installation.

1.2 Preparation for installation into the piping

The pressure, leak and operation tests performed in the factory and the quality management system introduced by the manufacturer ensure that the execution of the control valve complies with the specifications set forth in the contract The series number and the vital valve actuator data are found on the rating plate. The travel indicator shows the position of the closure member relative to the seat.

Before installing the valve, carefully clean the piping.

Rating plate

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As the information on rating plates reflects the special features of the type they describe, their appearance may differ. The rating plate contains the following data:

Kennzeichnung / Tag No.	Fabrikations Nr. / Serial No.
Typ / Type	Antrieb Typ / Actuator Type
DN / PN	Hub / Stroke
Sitz ø / Seat ø	Zuluft min. max. / Supply min. max.
Kvs / Cv	Federlaufbereich / Spring Range
Kegel / Plug	Sicherheitsstellung / Failure Position
Kennlinie / Characteristic	Umgegungstemp. / Ambient Temp.
Mat. Gehäuse / Mat. Body	Δp Antrieb / Δp Actuator
Innenteile / Trim	Einbaulage / Arrangement
Packung / Packing	Betriebstemperatur / Working Temperature
Betriebsdruck / Working Pressure	

1.3 Before installation, check the following items:

- The operator is required to carefully check the suitability of the control valve for its intended use in the system in advance.

  Any use not in compliance with the regulations/specifications can lead to serious damage to the control valve or may lead to failure of the facility!

- Does the nominal/operation data on the rating plate match the operational data of the facility?

  A mismatch may cause considerable damage to the valves.

- At the point of installation, is there enough space to fit and remove the valve?

  A lack of space can cause considerable problems and in the some cases necessitate expensive rerouting of the piping!

- Was the piping flushed and cleaned prior to the installation?

  Foreign particles can damage the control valve and accessories; this can be avoided by fitting a suitable dirt trap.

- Was the protective coat removed from the control valve, and was the valve cleaned?

  The preservative (Mipa Abziehhaut blue) and the spray (Castrol Safecoat DW 32) can contaminate the operating medium and must be removed before installation.

  Unsuitable cleaning agents that attack the PTFE and graphite sealing sets can cause damage and leaks. Pay particular attention to the relevant chemical resistance lists.

  Remove covers.

- Does the direction of flow arrow on the housing coincide with the direction of flow of the medium?

  If not, critical operating conditions can result that may damage the control valve, as they are not designed to cope with this situation.

- Are the piping flanges equiaxial and parallel and does the distance between pipe ends correspond to the valve length?

  If not, excessive tension, valve malfunctions and leaks at the flange connections may result.

- Is the piping routed correctly and is the valve free from additional piping forces?

  If not, leaks may develop and, depending on the situation, the valve may fail.

- Is the installation position of the valve with vertical valve spindle achieved?

  If not, increased wear in the stuffing box packing, leaks and, depending on the situation, rubbing may occur.

  Contact the manufacturer if the prevailing installation conditions mean that the valve will have to be fitted horizontally.

- Is there a suitable surge section upstream and downstream of where the valve is installed?

  The absence of a surge section can create critical operating conditions and cause impermissible levels of noise and vibration!

- Is appropriate equipotential bonding provided?

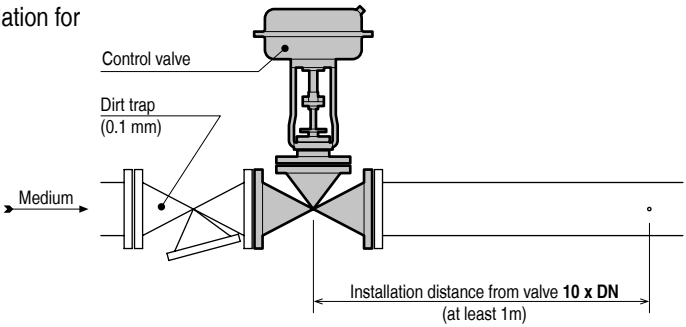
  Impermissible electrical compensating currents across the valve and the actuator can generate static and cause electrical discharging.

In explosive atmospheres, the only valves that may be used are those that comply with the permitted group, equipment category and temperature class requirements laid down in Directive 94/9/EC (ATEX)!

Recommended installation

Successful use of the control valve is conditional on the availability of a suitable installation environment. We suggest that the recommended values be adhered to, as it is very important to take account of physical aspects when using the control valve. Deviations can result in significant control deviations, and in the worst case expensive rerouting of the piping will be necessary. However, some physical processes will permit a deviation from these values, although in such cases system knowledge is required, as is the express approval of the manufacturer.

Recommended installation for control valves



2. Commissioning

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The medium and the valve can pose the following hazards:

- Critical operating conditions can cause impermissible levels of noise and vibration.

  Hearing loss, vascular and nerve problems, damage to joints and bones!

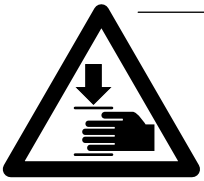
- Incorrect maintenance can result in the emission of thermal, cryogenic and toxic operating media.

  Danger of burns, freezing, acid burns, poisoning!

- The temperature of the operating medium is transferred to the surface of the valve.

  Danger of burns, freezing, explosion!

As these hazards can all be controlled by the plant operator, the operator is obliged to comply with national and international environmental regulations, install suitable protective measures to ensure workplace requirements are satisfied, and to instruct his employees accordingly.



Due to the risk of injury, it is prohibited to work between the yoke/columns while the valve is in operation.

Once these hazards have been averted by adopting appropriate protective measures, the valve can be installed and connected in the piping. The following points should be noted:

- Flange connection:

  Connection material (gaskets, bolts, nuts) are not part of the scope of supply.

  Locate gaskets in the centre of flanges, failure to do so can result in leaks and increased noise levels.

  If a completely installed piping is to be flushed or blown through for cleaning, replace the control valve with a matching piece.

- Welded connection:

  Welded connections have to be made in compliance with applicable welding regulations.

  After welding, carefully clean the piping again. Open control valves properly and remove any accumulated foreign particles. Advise the manufacturer in writing that the fitting has been opened!

When the control valve is installed in the piping:

- connect instrument air to the actuator or installed accessories (applies to pneumatic linear actuators).
- connect according to the wiring diagram in the removable actuator cover or according to manufacturer's actuator documentation (applies to electrical rotary/linear actuators).
- Continuously increase load until operation parameters are reached.

  Sudden exposure of the control valve to the full working pressure and working temperature may cause stress cracks.

- After the first loading (trial run) in depressurised and cool conditions, evenly tighten screw connections of sealing components crosswise (if required).

  Be careful to prevent damage to the high quality spindle surface finish! A damaged spindle surface finish may be detrimental to the smooth operation of the stuffing box.

- Excessive levels of noise and vibration during operation indicate critical operating conditions and must be avoided at all costs.

  Impermissible continuous operation of control valves under critical conditions can damage the valves, as they are not designed to cope with this situation.

- Avoid frequent system start-ups and shutdowns.

  Experience has shown that critical operating conditions, which can damage the control valve, are often encountered when starting up or shutting down the system.

- Keep the operating medium free of foreign particles.

  Foreign particles can damage the control valve; this can be prevented by fitting a suitable dirt trap.

- The instrument air must conform to at least the ISO 8573-1 class 2 or the requirements of the accessory manufacturer.

  Contaminated instrument air can damage the accessories and valve or cause them to fail.

Bodily injury or damage to the control valve and its accessories as the result of non-adherence to warning instructions, as well as transport damage and improper use (e.g. as a climbing aid, etc.), will render the manufacturer's guarantee null and void and release him from any responsibility.

3. Maintenance

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Measure	Interval	
Clean valve and actuator spindle with a soft cloth		depending on degree of contamination
Tighten if stuffing box leaks **Caution: Do not „over seal“ the stuffing box!**	Standard stuffing boxes subjected to “normal“ operating conditions	every 10,000 strokes
	Standard stuffing boxes subjected to “difficult“ operating conditions • packing exposed to aggressive medium • major temperature change during operation • occurrence of vibrations • unfavourable installation position	every 5,000 strokes
Check spring tension and tighten if necessary	Spring loaded stuffing box systems and “normal“ operating conditions	every 100,000 strokes at least once per year
	Spring loaded stuffing box systems and “difficult“ operating conditions	every 10,000 strokes
Pneumatic linear actuators		maintenance free
Electric linear/rotary actuators	Check spindle/gear if required, lubricate	largely maintenance free every 200,000 up-and-down strokes
Electric linear/rotary actuators	Grease (grease nipple)	at least once per year

4. Repair

If a fault or defect occurs which, according to the list of measures below, requires the customer services department or contract partner to be contacted, the manufacturer’s guarantee shall be rendered null and void - and the manufacturer released from any responsibility - unless the customer services department or contract partner is duly notified. If the customer performs the repairs himself, these operating instructions and the respective disassembly/assembly instructions must be followed to the letter and carried out in a competent manner. Original replacement parts must be used in every case.

Control valves are pressure vessels!

Improper opening of the actuator or fitting may result in bodily injury!

4.1 Trouble shooting

Defect	No.	Possible causes	Remedy
Spindle does not move	1.1	• no aux. energy supply (pneumatic air or electrical power) to actuator and accessories (solenoid valve, filter-reducing station, positioner, limit switch and special accessories)	• pneumatic actuators: check supply line for leaks check pressure (usually 6 bar) • electrical actuators: check power supply (connections, circuit breakers, voltage)
	1.2	• the fitted accessories do not work	• see maintenance and operating instructions of accessories manufacturer
	1.3	• the pneumatic actuator is defective	• contact customer services department or contract partner
	1.4	• the electrical actuator is defective	• see maintenance and operating instructions of actuator manufacturer
	1.5	• excessive tightening of the stuffing box packing	• loosen stuffing box packing nuts until valve operates properly **Caution: make sure there are no leaks!**
	1.6	• valve trim worn, stuck	• contact customer services department or contract partner
Jolting spindle movement	2.1	• the electrical actuator is defective	• clean spindle with suitable cleaning agent
	2.2	• damaged spindle	• contact customer services department or contract partner
	2.3	• actuator not powerful enough	• compare actuator specs on the rating plate with operation specifications of the facility - if incompatible, contact customer services department or contract partner
Spindle travel less than full stroke (0 to 100% stroke) or flow rate is too low	3.1	• air supply pressure too low	• provide air at the pressure stated on the rating plate
	3.2	• pneumatic actuators: bad hand wheel position (hand wheel emergency operation)	• move hand wheel to limit position
	3.3	• electrical actuators: limit switch misadjusted	• readjust limit switch to actuator manufacturer's specification
	3.4	• badly adjusted or defective positioner	• readjust positioner to positioner manufacturer's specifications
	3.5	• foreign particles in valve seat, damaged trim	• contact customer services department or contract partner

Trouble shooting - continued

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Defect	No.	Possible causes	Remedy
Excessive valve-seat leakage	4.1	• damaged sealing edges at valve seat or plug	• contact customer services department or contract partner
	4.2	• foreign particles in seat area	• contact customer services department or contract partner
	4.3	• plug does not close fully	• refer to 3.1 to 3.5
Leaking stuffing box system	5.1	• compression force on packing too low	• slightly re-tighten stuffing box packing **Caution: make sure the valve spindle can still move!**
	5.2	• worn packing	• slightly re-tighten stuffing box packing **Caution: make sure the valve spindle can still move!** if the packing does not stop leaking, contact customer services department or contract partner
	5.3	• dirty spindle	• clean spindle with suitable cleaning agent
	5.4	• damaged spindle	• contact customer services department or contract partner
Leaking top or lid seal	6.1	• pressing force on seal(s) too low	• properly re-tighten top or lid nuts crosswise
	6.2	• seals(s) defective	• contact customer services department or contract partner
Leaking housing	7.1	• medium- or flow-related damage	• contact customer services department or contract partner
No limit switch signal	8.1	• power supply to limit switch interrupted	• check power supply (connections, circuit breakers, voltage)
	8.2	• limit switch misadjusted	• readjust limit switch; operating distance see limit switch data sheet
Vibrating positioner	9.1	• defective positioner	• see maintenance and operating instructions of positioner manufacturer

If the problem is not solved by taking the above measures, contact the customer services department or contract partner.

Service hotline Austria:

+43 (0)664 341 8 616

Service hotline Germany:

+49 (0)2157-8176-29 or **+49 (0)163-8176-014**

EG Konformitätserklärung / EC Declaration of Conformity

gemäß DGRL 97/23/EG / acc. to PED 97/23/EC
gemäß Richtlinie 90/396/EWG / acc. to Directive 90/396/EEC
gemäß ATEX 94/9/EG / acc. to ATEX 94/9/EC
gemäß Richtlinie 2006/42/EG / acc. to Directive 2006/42/EC

Hersteller/Manufacturer

FLOWSERVE (Austria) GmbH
Control Valves – Villach Operation
Kasernengasse 6, A-9500 Villach

Richtlinien / Directives *Produkte / Products*	DGRL/PED 97/23/EG Mod.	Richtl./Dir. 90/396/EWG	ATEX 94/9/EG	Richtl./Dir. 2006/42/EG	EN 161, DIN 3394	EN 264 DIN 32725	SIL IEC 61508	ISO 15848 VDI 2440
Autom. Absperrarmaturen für gasförmige Brennstoffe u. Sicherheitsabsperreinrichtungen für flüssige Brennstoffe Automatic shut-off valves for inflammable gases and Safety shutoff devices for inflammable liquids Type D726, D738, D740	**B + D**	•	•	•	•	•	•	•
Stellgeräte FlowTop Control valves FlowTop Type V726, V738, V740	**B + D H**		•	•	•	•	•	•
Stellgeräte / Control valves Type V724, V760	**H**		•	•			•	•
Stellgeräte / Control valves Type V725, V723	**H**		•	•				
Stellgeräte / Control valves Type MarkOne, Mark100, MarkSix	**H**		•	•				•
Stellgeräte / Control valves Sonderregelventile / Special control valves 1)	**H**		•	•				•
Einspritzkühlventile Injection nozzle valves Type V901	**H**			•				
Selbsttätige Regler Self acting regulators Type 5801, 5610	**H**			•				
Pneumatische Antriebe / Pneumatic actuators Type FlowAct, Valtek Piston Actuator	**-**		•	•				

1) Für den Europäischen Markt / for European Market

Benannte Stelle für die Kontrollen / Notified Body for the Inspections

DGRL 97/23/EG / PED 97/23/EC
TÜV CERT-Zertifizierungsstelle für Druckgeräte der TÜV Anlagentechnik GmbH
Am Grauen Stein, D-51101 Köln
Kennummer der Benannten Stelle / Number of Notified Body **0035**

Richtlinie 90/396/EWG / Directive 90/396/EEC
DVGW Zertifizierungsstelle Technisch-wissenschaftlicher Verein
Josef-Wirmer-Straße 1-3, D-53123 Bonn
Kennummer der Benannten Stelle / Number of Notified Body **0085**

Management - System / Management - System OHSAS 18001:2007, ISO 14001:2004, ISO9001:2008
DNV Zertifizierung und Umweltgutachter GmbH
Schnieringshof 14, D-45329 Essen

Bevollmächtigter des Herstellers in der EG
Authorized representatives of the manufacturer in the EC

Villach, 09.11.2009

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Technischer Leiter / Technical Director

Ing. Herbert Schifferl
QM Leiter / QM Manager

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